QIC 95-101
25 Sept 97
Hewlett-Packard
Ron Kennedy

Medium Types and Density Codes
Revision E

Table of Contents

Revision History

A	13 Dec 95	Initial revision.
B	21 Mar 96	Added hole spacing columns to Medium Type Codes table and Coding column to Density Codes table per QIC 96-4A. Changed Medium Type Code 43h to Reserved.
C	20 June 96	Added reference to QIC-175. Changed coercivity of QIC-163 from 1800 Oe to 1850 Oe.
D	Sept 96	Changed media type 96h from Wide Tape, 300 ft to reserved status since this product was never developed.
E	25 Sept 97	Changed editor from John K. Moore to Ron Kennedy. Added note that no more media/density codes would be assigned. Changed media type 81h from QIC-EST to reserved status since this product never shipped.

1. Introduction

This document defines Medium Type Codes and Density Codes as used in both QIC-121, *Implementation of SCSI-2 for QIC-Compatible Sequential Storage Devices* and QIC-157, *Common SCSI/ATAPI Command Set for Streaming Tape*.

There will be no new media or density codes assigned to QIC products after August 27, 1997. This decision was based on: 1) ANSI will not grant any new media or density codes and 2) it is no longer believed that media or density codes are required for the software applications.

2. Medium Type Codes

Medium Type Code	Industry Reference No.	QIC/ANSI Reference	QIC Develeopment. Stand.ard Reference	Max Speed (IPS)	Coercivity (Oe)	Form Factor (inches)	Tape Width (inches)	Length (feet)	A (in)	B (in)	C (in)	D (in)	E (in)	Hole Pattern Code (octal)	Notes
01h	DC300			90	310	5.25	.250	300	18	18	36	48	18		
02h	DC300XLP			90	310	5.25	0.25	450	18	18	36	48	18		
03h	DC615A			90	550	5.25	0.25	150	18	18	48	48	18		
04h	DC600A		QIC-24-DC	90	550	5.25	0.25	620	18	18	48	48	18		
05h	DC6037			120	550	5.25	0.25	150	18	18	60	60	18		
06h	DC6150		QIC-120-DC QIC-150-DC	120	550	5.25	0.25	620	18	18	60	60	18		
07h	DC6250		QIC-150-DC	120	550	5.25	0.25	1020	18	18	60	60	18		
08h	DC6320		QIC-525-DC	120	550	5.25	0.25	620	18	23	60	60	18		
09h	DC6525		QIC-525-DC	120	550	5.25	0.25	1020	18	23	60	60	18		
0Ah-0Fh															Unassigned
10h	DC2000		QIC-40-MC QIC-100-MC	90	550	3.5	0.25	205	12	12	30	30	12		
11h	DC2080		QIC-80-MC	90	550	3.5	0.25	205	12	12	30	30	12		
	DC2120XL	QIC-160	QIC-80-MC	90	550	3.5	0.25	425	12	12	30	30	12		
	QIC-EX	QIC-167	QIC-80-MC	120	550	3.5	0.25	1000	12	12	30	30	12		
12h	DC2110		QIC-128-MC	120	550	3.5	0.25	205	12	15	30	30	12		
13h	DC2120		QIC-80-MC	90	550	3.5	0.25	307.5	12	12	36	36	12		
14h	DC2165		QIC-128-MC	120	550	3.5	0.25	307.5	12	15	36	36	12		
15h	QIC-EST	QIC-142		90	550	3.5	0.25	1100	12	12	54	54	12		
16h	QW5122	QIC-159	QIC-80-MC	90	550	3.5	0.315	400	12	12	48	48	12		
	QIC-EX	QIC-168	QIC-80-MC	120	550	3.5	0.315	1000	12	12	48	48	12		
17h	Travan 1	QIC-161	QIC-80-MC	90	550	3.5	0.315	750	12	12	63	63	12		
18h-1Fh															Unassigned
20h -21h						5.25								20 - 21	Reserved
22h	DC9210	QIC-137	QIC-2100-DC	120	900	5.25	0.25	950	18	30	60	60	18	22	
23h	DC9135	QIC-137	QIC-1350-DC	120	900	5.25	0.25	760	18	30	60	60	18	23	
24h	DC9100	QIC-136	QIC-1000-DC	120	900	5.25	0.25	760	18	30	60	60	18	24	
25h	DC9120	QIC-136	QIC-1000-DC	120	900	5.25	0.25	950	18	30	60	60	18	25	
26h	DC9100SL	QIC-136	QIC-1000-DC	120	900	5.25	0.25	155	18	30	60	60	18	26	

Medium Type Code	Industry Reference No.	QIC/ANSI Reference	QIC Develeopment. Stand.ard Reference	Max Speed (IPS)	Coercivity (Oe)	Form Factor (inches)	Tape Width (inches)	Length (feet)	A (in)	B (in)	C (in)	D (in)	E (in)	Hole Pattern Code (octal)	Notes
27h														27	Reserved
28h-2Fh															Unassigned
30h	Firmware			120	900	5.25	0.25	155	18	30	60	60	18	30	
31h	DC9200SL			120	900	5.25	0.25	155	18	30	60	60	18	31	
32h														32	Reserved
33h	DC13GBc	QIC-139	QIC-5010-DC	120	900	5.25	0.25	1200	18	30	60	60	18	33	
34h	DC9200	QIC-136	QIC-2GB-DC	120	900	5.25	0.25	950	18	30	60	60	18	34	
35h	DC9120XL	QIC-136	QIC-1000-DC	120	900	5.25	0.25	1200	18	30	60	60	18	35	
36h-37h														36 - 37	Reserved
38h-3Fh															Unassigned
40h	DC9250	QIC-136	QIC-2GB-DC	120	900	5.25	0.25	1200	18	30	60	60	18	40	
41h						5.25								41	Reserved
42h	DC9500	QIC-137	QIC-5GB-DC	120	900	5.25	0.25	1200	18	30	60	60	18	42	
43h						5.25								43	Reserved
44h	DC13GB test	QIC-139	QIC-5010-DC	120	900	5.25	0.25	155	18	30	60	60	18	44	
45h	DC9200	QIC-137	QIC-2GB-DC	120	900	5.25	0.25	1500	18	30	60	60	18	45	DC9210 with alternate cartridge lockout
46h	DC9500SL	QIC-137	QIC-5GB-DC	120	900	5.25	0.25	155	18	30	60	60	18	46	
47h	DC25GB	QIC 94-9	QIC-5210-DC			5.25		1500						47	
48h-4Fh															Unassigned
50h	DC25GB	QIC 94-9	QIC-5210-DC			5.25		155						50	
51h-57h						5.25								51 - 57	Reserved
58h-5Fh															Unassigned
60h-67h						5.25								60 - 67	Reserved
68h-6Fh															Unassigned
70h-77h						5.25								70 - 77	Reserved
78h-7Fh															Unassigned
80h						3.5								00	Reserved
81h														01	Reserved
82h						3.5								02	Reserved

Medium Type Code	Industry Reference No.	QIC/ANSI Reference	QIC Develeopment. Stand.ard Reference	Max Speed (IPS)	Coercivity (Oe)	Form Factor (inches)	Tape Width (inches)	Length (feet)	A (in)	B (in)	C (in)	D (in)	E (in)	Hole Pattern Code (octal)	Notes
83h	MC3000	QIC-143	QIC-3010-MC QIC-3020-MC QIC-3030-MC QIC-3040-MC QIC-3050-MC	120	900	3.5	0.25	300	12	27.5	24	24	15	03	
84h	DC-3GB	QIC-138	QIC-3070-MC	120	900	3.5	0.25	295	12	27.5	24	24	15	04	Obsolete
85h						3.5								05	Reserved
86h	QW3010XLF QW3020XLF QW3040XL	QIC-148	QIC-3010-MC QIC-3020-MC QIC-3040-MC	120	900	3.5	0.315	400	12	27.5	24	24	15	06	
	QIC-EX	QIC-166	QIC-3010-MC QIC-3020-MC QIC-3040-MC	120	900	3.5	0.315	1000	12	27.5	24	24	15	06	
87h		QIC-163	QIC-3210-MC	120	1850	3.5	0.315	400	12	12	42	42	12	07	MP++
88h-8Fh															Unassigned
90h						3.5								10	Reserved
91h	Test					3.5		100	12	27.5	24	24	15	11	
92h	MC3100	QIC-153	QIC-3110-MC	90	1400	3.5	0.25	400	24	24	42	42	24	12	BeFe, Obsolete
93h	MC3000XL	QIC-143	QIC-3010-MC QIC-3020-MC QIC-3030-MC QIC-3040-MC QIC-3050-MC	120	900	3.5	0.25	400	12	27.5	24	24	12	13	
	QIC-EX	QIC-165	QIC-3010-MC QIC-3020-MC QIC-3040-MC	120	900	3.5	0.25	1000	12	12	24	24	12	13	
94h-95h						3.5								14 - 15	Reserved
96h						3.5								16	Reserved
97h	QIC-EX	QIC-175	QIC-3210-MC	120	1850	3.5	0.315	1000	12	27.5	24	24	15	17	
98h-9Fh															Unassigned
A0h						3.5								20	Reserved
A1h	Firmware					3.5		100	12	27.5	24	24	15	21	
A2h-A5h						3.5								22 - 25	Reserved
A6h	Travan 2/3	QIC-162	QIC-3010-MC QIC-3020-MC	120	900	3.5	0.315	750	12	27.5	24	24	15	26	
A7h						3.5								27	Reserved

Medium Type Code	Industry Reference No.	QIC/ANSI Reference	QIC Develeopment. Stand.ard Reference	Max Speed (IPS)	Coercivity (Oe)	Form Factor (inches)	Tape Width (inches)	Length (feet)	A (in)	B (in)	C (in)	D (in)	E (in)	Hole Pattern Code (octal)	Notes
A8h-AFh															Unassigned
B0h-B5h						3.5								30 - 35	Reserved
B6h	Travan 4	QIC-164	QIC-3095-MC	120	900	3.5	0.315	740	12	27.5	144	144	15	36	
	QW3095XL	QIC-148	QIC-3095-MC	120	900	3.5	0.315	400	12	27.5	144	144	15	36	
B7h-C2h						3.5									Reserved
C3h	MC3080	QIC-156	QIC-3080-MC	120	900	3.5	0.25	300	18	18	72	72	18	00	
C4h-C5h						3.5									Reserved
C6h	QW3080XL	QIC-156	QIC-3080-MC	120	900	3.5	0.315	400	18	18	72	72	18	00	
C7h-D2h						3.5									Reserved
D3h	MC3080XL	QIC-156	QIC-3080-MC	120	900	3.5	0.25	400	18	18	72	72	18	00	
D4h-FFh						3.5									Reserved
	SDC150			90		5.25	0.25	150	18	18	36	48	18		From QIC-89-7
	SDC300			90		5.25	0.25	305	18	18	36	48	18		From QIC-89-7
	SDC450			90		5.25	0.25	455	18	18	36	48	18		From QIC-89-7
	DC6010			120	550	5.25	0.25	40	18	18	60	60	18		From QIC-89-7
	SDC6110			120	550	5.25	0.25	450	18	18	60	60	18		From QIC-89-7
	DC6080			120	550	5.25	0.25	155	18	23	60	60	18		From QIC-89-7

Definitions for columns A through E:
A is the distance between adjacent BOT markers and between adjacent EOT markers except those defined by dimensions B and E.
B is the distance between the inner-most BOT marker and the adjacent BOT marker.
C is the distance between the inner-most BOT marker and the Load Point marker.
D is the distance between the inner most EOT marker and the Early Warning marker.
E is the distance between the inner-most EOT marker and the adjacent EOT marker.

3. Density Codes

QIC/ANSI Reference	Density Code	Bit Density bpi (bpmm)	Flux Density ftpi	Tape Width inches (mm)	Tracks	Coding	Native Capacity Length (ft)	 Capacity (MB)	Assigning Organization	Density Name
Data Cartridge Products										
X3.136-1986	04h	8000 (315)		0.25 (6.35)	4/9	GCR			X3B5	X3.136
X3.136-1986	05h	8000 (315)		0.25 (6.35)	4/9	GCR			X3B5	X3-136
X3.116-1986	07h	6400 (252)		0.25 (6.35)	4	IMFM			X3B5	X3.116
X3.56-1986	0Bh	1600 (63)		0.25 (6.35)	4	PE			X3B5	X3.56
QIC-120-DC	0Fh	10000 (394)	12500	0.25 (6.35)	15	GCR	620		QIC	120-DC
QIC-150-DC	10h	10000 (394)	12500	0.25 (6.35)	18	GCR	620 1020		QIC	150-DC
QIC-525-DC	11h	16000 (630)	20000	0.25 (6.35)	26	GCR	620 1020		QIC	525-DC
QIC-1000-DC	15h	67733 (2667)	45000	0.25 (6.35)	30	GCR	760 950 1200		QIC	1000-DC
QIC-1000-DC	1Eh	67733 (2667)	45000	0.25 (6.35)	30	GCR			QIC	1000-DC
QIC-1350-DC	12h	51667 (2034)	38750	0.25 (6.35)	30	RLL	760 950 1200		QIC	1350-DC
QIC-2GB-DC	22h	40640 (1600)	50800	0.25 (6.35)	42	GCR	1200		QIC	2GB-DC
QIC-2100-DC	1Fh	67733 (2667)	50800	0.25 (6.35)	30	RLL	900 1200		QIC	2100-DC
QIC-5GB-DC	28h	93273 (3762)	62182	0.25 (6.35)	44	RLL	1200	5000	QIC	5GB-DC
QIC-5010-DC	21h	76200 (3000)	50800	0.25 (6.35)	144	RLL	1200	13000	QIC	5010-DC
QIC-5210-DC	30h	114300 (4500)	76200	0.25 (6.35)	144	RLL	1500	25000	QIC	5210-DC

QIC/ANSI Reference	Density Code	Bit Density bpi (bpmm)	Flux Density ftpi	Tape Width inches (mm)	Tracks	Coding	Native Capacity Length (ft)	 Capacity (MB)	Assigning Organization	Density Name
Minicartridge products										
QIC-40-MC	40h	10000 (3937)	10000	0.25 (6.35) 0.25 (6.35)	20 20	MFM	205 307.5	40 60	QIC	40-MC
QIC-80-MC	41h	14700 (5787)	14700	0.25 (6.35) 0.25 (6.35) 0.315 (8.00) 0.25 (6.35) 0.315 (8.00) 0.25 (6.35) 0.315 (8.00)	28 28 36 28 36 28 36	MFM	205 307.5 400 425 750 1000 1000	80 120 208 170 400 400 530	QIC	80-MC
QIC-100-MC	42h	10000 (394)	12500	0.25 (6.35)	24		205	86	QIC	100-MC
QIC-128-MC	43h	16000 (630)	20000	0.25 (6.35) 0.25 (6.35)	32 32		205 307.5	86 128	QIC	128-MC
QIC-3010-MC	44h	22125 (8711)	22125	0.25 (6.35) 0.315 (8.00) 0.315 (8.00) 0.25 (6.35) 0.315 (8.00)	40 50 50 40 50	MFM	400 400 750 1000 1000	340 425 800 850 1100	QIC	3010-MC
QIC-3020-MC	1Ch	42000 (16535)	42000	0.25 (6.35) 0.315 (8.00) 0.315 (8.00) 0.25 (6.35) 0.315 (8.00)	40 50 50 40 50	MFM	400 400 750 1000 1000	680 833 1600 1700 2200	QIC	3020-MC
QIC-3030-MC	1Dh	40640 (1600)	50800	0.25 (6.35)	40	GCR	400	580	QIC	3030-MC
QIC-3040-MC	23h	40640 (1600)	50800	0.25 (6.35) 0.315 (8.00) 0.315 (8.00)	42 52 52	GCR	400 400 1000	840 1000 3200	QIC	3040-MC
QIC-3050-MC	92h	58125 (2288)	38750	0.25 (6.35)	40	RLL	400	1000	QIC	3050-MC
QIC-3070-MC	20h	67733 (2667)	50800	0.25 (6.35)	144	RLL			QIC	3070-MC

QIC/ANSI Reference	Density Code	Bit Density	Flux Density	Tape Width	Tracks	Coding	Native Capacity		Assigning Organization	Density Name
		bpi (bpmm)	ftpi	inches (mm)			Length (ft)	Capacity (MB)		
QIC-3080-MC	29h	60000 (2362)	45000	0.25 (6.35) 0.315 (8.00)	59 76	RLL	400 400	1600 2000	QIC	3080-MC
QIC-3095-MC	45h	76200 (3000)	50800	0.315 (8.00) 0.315 (8.00)	72 72	RLL	400 740	2100 4000	QIC	3095-MC
QIC-3110-MC	93h	105000 (4134)	70000	0.25 (6.35)	48	RLL	400	2000	QIC	3110-MC
QIC-3210-MC	24h	60960 (2400)	76200	0.25 (6.35) 0.315 (8.00)	56 72	GCR	400 400	1800 2300	QIC	3210-MC
QIC-3230-MC	46h	114300 (4500)	76200	0.315 (8.00)	180	RLL	750	15500	QIC	3230-MC

Coding abrieviations:
GCR Group Code Recording
PE Phase Encoded
IMFM Inverted Modified Frequency Modulation
MFM Modified Frequency Modulation
RLL Run Length Limited